

# Claims

- [c1] A manual spray cleaner for removing dirt and stains from fabrics and carpets comprising:  
a container having two separate chambers and a single dispensing spray outlet for dispensing controlled amounts of liquids from each of the chambers;  
one of the chambers has a fabric/carpet cleaning composition therein and the other chamber has an oxidizing composition that enhances the cleanability of the fabric/carpet cleaning composition;  
a dispensing system for simultaneously dispensing the fabric/carpet cleaning composition and the oxidizing composition from their respective chambers, mixing the two compositions together, and dispensing a mixture of the compositions from the container under pressure.
- [c2] A manual spray cleaner according to claim 1 wherein the oxidizing composition includes a fabric/carpet protectant.
- [c3] A manual spray cleaner according to claim 1 wherein the dispensing system is adapted to mix the two compositions together in the single dispensing spray outlet before they are sprayed from the dispensing spray outlet.

- [c4] A manual spray cleaner according to claim 1 wherein the dispensing system is adapted to mix the two compositions together at the surface of the fabric or carpet and after they are sprayed from the dispensing spray outlet.
- [c5] A manual spray cleaner according to claim 1 wherein the dispensing system includes aerosol propellants in each of the two separate chambers.
- [c6] A manual spray cleaner according to claim 1 wherein the dispensing system comprises a mechanical pump for drawing the two compositions from their respective chambers.
- [c7] A manual spray cleaner according to claim 1 wherein the fabric/carpet cleaning composition comprises one or more cleaning solvents, a surfactant and, optionally, a fragrance.
- [c8] A manual spray cleaner according to claim 7 wherein the fabric/carpet cleaning composition further includes a pH adjusting agent to maintain a pH in the cleaning solution between 7.5 and 12.0 in order to trigger release of oxygen in the oxidizing composition.
- [c9] A manual spray cleaner according to claim 8 wherein the pH of oxidizing solution is in the range of about 1.5 to

about 8.5.

- [c10] A manual spray cleaner according to claim 9 wherein the pH of oxidizing solution is about 6.8.
- [c11] A manual spray cleaner according to claim 10 wherein the pH of the cleaning solution is about 9.5.
- [c12] A manual spray cleaner according to claim 11 wherein the cleaning composition includes at least one of an anti-resoil and anti-stain agent.
- [c13] A manual spray cleaner according to claim 12 wherein the oxidizing composition includes deionized water, a peroxide compound, a stabilizer and, optionally, anti-soil and/or anti-stain protectants.
- [c14] A manual spray cleaner according to claim 13 wherein the peroxide compound in the oxidizing composition is hydrogen peroxide.
- [c15] A manual spray cleaner according to claim 7 wherein the fabric/carpet cleaning composition further includes at least one of an anti-resoil and anti-stain agent.
- [c16] A manual spray cleaner according to claim 1 wherein the fabric/carpet cleaning composition further includes at least one of an anti-resoil and anti-stain agent.

- [c17] A manual spray cleaner according to claim 1 wherein the oxidizing composition includes deionized water, a peroxide compound, a stabilizer and, optionally, anti-soil and/or anti-stain protectants.
- [c18] A manual spray cleaner according to claim 17 wherein the peroxide compound in the oxidizing composition is hydrogen peroxide.
- [c19] A manual spray cleaner according to claim 1 wherein each of the container chambers further comprises an aerosol, an outlet with a valve assembly to control the flow of fluid through the outlet, and a dip tube connected to the valve assembly for dispensing liquid under pressure from each of the chambers.
- [c20] A manual spray cleaner according to claim 19 wherein the valve assembly in the oxidizing composition chamber further comprises a vapor tap to relieve excess pressure from the chamber.
- [c21] A manual spray cleaner according to claim 20 wherein the vapor tap comprises an orifice in the range of 0.001 to 0.020 inches in diameter.
- [c22] A manual spray cleaner according to claim 19 wherein the valve assembly further comprises a gasket to seal the valve assembly chamber.

- [c23] A manual spray cleaner according to claim 22 wherein the gasket material in the oxidizing composition chamber is ethylene propylene diene terpolymer.
- [c24] A manual spray cleaner according to claim 19 wherein the valve for the chamber that contains the oxidizing composition has valve components that are made from polypropylene.
- [c25] A manual spray cleaner according to claim 24 wherein the valve for the chamber that contains the cleaning composition has valve components that are made from nylon.
- [c26] A manual spray cleaner according to claim 25 wherein the chamber that has the oxidizing composition is made from aluminum and has a coating of a material inert to the peroxide compound on inner walls of chamber that are in contact with the oxidizing composition.
- [c27] A manual spray cleaner according to claim 26 wherein the inert material coating is selected from the group consisting of polyolefins, epoxy phenolics, polyamide-imides, and vinyl organosols.
- [c28] A manual spray cleaner according to claim 27 wherein the chamber that has the oxidizing composition is

formed in part by a cup, and the outlet opening for the chamber is positioned in the cup, and the cup is formed of aluminum and has a coating of a material inert to the peroxide compound.

- [c29] A manual spray cleaner according to claim 28 wherein the inert material coating that coats the cup is selected from the group consisting of polyolefins, epoxy phenolics, polyamide-imides, and vinyl organosols.
- [c30] A manual spray cleaner according to claim 29 wherein the inert material that forms the dip tube and that is coated on the inner surface of the chamber that has the oxidizing composition is a polyolefin.
- [c31] A manual spray cleaner according to claim 26 wherein the valves have at least one orifice having a diameter of about 0.020 0.024 inches.
- [c32] A manual spray cleaner according to claim 31 wherein the aerosol propellant for the chamber that has the oxidizing composition is a fluorinated hydrocarbon and the valve for the chamber that has the oxidizing composition has one orifice.
- [c33] A manual spray cleaner according to claim 32 wherein chamber that has the oxidizing composition is pressurized at about 70 pounds per square inch.

- [c34] A manual spray cleaner according to claim 33 wherein aerosol propellant for the chamber that has the cleaning composition is dimethyl ether and the valve for the chamber that has the cleaning composition has two orifices.
- [c35] A manual spray cleaner according to claim 34 wherein the chamber that has the cleaning composition is pressurized at about 40 pounds per square inch.
- [c36] A manual spray cleaner according to claim 25 wherein the chamber that has the oxidizing agent is made from steel and has a coating of a material inert to the peroxide compound on inner walls of chamber that are in contact with the oxidizing composition.
- [c37] A manual spray cleaner according to claim 36 wherein the inert material coating is selected from the group consisting of polyolefins, epoxy phenolics, polyamide-imides, and vinyl organosols.
- [c38] A manual spray cleaner according to claim 37 wherein the chamber that has the oxidizing agent is formed in part by a cup, and the outlet opening for the chamber is positioned in the cup, and the cup is formed of steel and has a coating of a material inert to the peroxide compound.

- [c39] A manual spray cleaner according to claim 38 wherein the inert material coating that coats the cup is selected from the group consisting of polyolefins, epoxy phenolics, polyamide-imides, and vinyl organosols.
- [c40] A manual spray cleaner according to claim 39 wherein the inert material that forms the dip tube and that is coated on the inner surface of the chamber that has the oxidizing agent is a polyolefin.
- [c41] A manual spray cleaner according to claim 36 wherein the valves have at least one orifice having a diameter of about 0.020 0.024 inches.
- [c42] A manual spray cleaner according to claim 41 wherein the aerosol propellant for the chamber that has the oxidizing composition is a fluorinated hydrocarbon and the valve for the chamber that has the oxidizing composition has one orifice.
- [c43] A manual spray cleaner according to claim 42 wherein chamber that has the oxidizing composition is pressurized at about 70 pounds per square inch.
- [c44] A manual spray cleaner according to claim 43 wherein aerosol propellant for the chamber that has the cleaning composition is dimethyl ether and the valve for the



chamber that has the cleaning composition has two orifices.

- [c45] A manual spray cleaner according to claim 44 wherein the chamber that has the cleaning composition is pressurized at about 40 pounds per square inch.
- [c46] A manual spray cleaner according to claim 38 wherein the chamber that has the oxidizing agent and the cup are formed from zinc-plated steel.
- [c47] A manual spray cleaner according to claim 1 wherein the single dispensing spray outlet has a mechanical breakup plug and a terminal orifice to mix and disperse the mixture of the compositions into a spray pattern.
- [c48] A manual spray cleaner according to claim 47 wherein the terminal office has a diameter in the range of about 0.020–0.040 inches.
- [c49] A manual spray cleaner for removing dirt and stains comprising:
  - a pressure chamber and a dispensing spray outlet for dispensing controlled amounts of fluids under pressure from the pressure chamber;
  - an oxidizing composition within the pressure chamber,
  - and;
  - a propellant mixed with the oxidizing composition to

pressurize the oxidizing composition within the chamber;

wherein the oxidizing composition can be drawn from the chamber and delivered to the surface to be cleaned.

[c50] A manual spray cleaner for removing dirt and stains according to claim 49 wherein the oxidizing composition comprises a peroxide compound.

[c51] A manual spray cleaner for removing dirt and according to claim 49 wherein the oxidizing composition includes deionized water, a peroxide compound, a stabilizer and, optionally, anti-soil and/or anti-stain protectants.

[c52] A manual spray cleaner according to claim 51 wherein the peroxide compound is hydrogen peroxide.

[c53] A manual spray cleaner for removing dirt and stains according to claim 52 wherein the chamber is made from aluminum.

[c54] A manual spray cleaner for removing dirt and stains according to claim 53 wherein the chamber is made from drawn aluminum.

[c55] A manual spray cleaner for removing dirt and stains according to claim 54 wherein the dispensing spray outlet comprises a normally closed pressure valve that is con-

nected to a dip tube that extends from the normally closed valve into the chamber, and wherein both the dip tube and the normally closed valve are made from thermoplastic materials that are inert to the oxidizing composition.

[c56] A manual spray cleaner for removing dirt and stains according to claim 55 wherein the thermoplastic material for the dip tube is an olefin polymer.

[c57] A manual spray cleaner for removing dirt and stains according to claim 56 wherein the thermoplastic material for the normally closed valve is nylon.

[c58] A manual spray cleaner for removing dirt and stains according to claim 57 wherein the normally closed valve contains a spring that is made from stainless steel.

[c59] A manual spray cleaner for removing dirt and stains according to claim 58 wherein the normally closed valve has at least one orifice having a diameter of about 0.024 inches.

[c60] A manual spray cleaner for removing dirt and stains according to claim 52 wherein the chamber is made from steel and has a coating of a material inert to the peroxide compound on inner walls of chamber that are in contact with the oxidizing composition.

- [c61] A manual spray cleaner for removing dirt and stains according to claim 60 wherein the inert material coating is selected from the group consisting of polyolefins, epoxy phenolics, polyamide-imides, and vinyl organosols.
- [c62] A manual spray cleaner for removing dirt and stains according to claim 61 wherein the dispensing spray outlet comprises a normally closed pressure valve that is connected to a dip tube that extends from the normally closed valve into the chamber, and wherein both the dip tube and the normally closed valve are made from thermoplastic materials that are inert to the oxidizing composition.
- [c63] A manual spray cleaner for removing dirt and stains according to claim 62 wherein the thermoplastic material for the normally closed valve is nylon or a polyolefin.
- [c64] A manual spray cleaner for removing dirt and stains according to claim 63 wherein the thermoplastic material for the dip tube is an olefin polymer.
- [c65] A manual spray cleaner for removing dirt and stains according to claim 64 wherein the valve contains a spring that is made from stainless steel.
- [c66] A manual spray cleaner for removing dirt and stains ac-

ording to claim 65 wherein the valve has at least one orifice having a diameter of about 0.024 inches.

- [c67] A method for cleaning a carpet surface comprising the steps of:  
simultaneously dispensing a fabric/carpet cleaning composition and an oxidizing composition that enhances the cleanability of the fabric/carpet cleaning composition from separate chambers onto the carpet surface; and recovering a soiled carpet cleaning solution from the carpet.
- [c68] A method of cleaning a carpet according to claim 67 wherein the carpet cleaning composition and the oxidizing composition are each aerosol propelled from the separate chambers.
- [c69] A method of cleaning a carpet according to claim 67 wherein the oxidizing composition includes a fabric/carpet protectant.
- [c70] A method of cleaning a carpet according to claim 67 and further comprising the step of mixing the two compositions together before the dispensing step.
- [c71] A method of cleaning a carpet according to claim 67 and further comprising the step of mixing the two compositions together at the surface of the fabric or carpet after

the dispensing step.

- [c72] A method of cleaning a carpet according to claim 67 wherein the dispensing step includes the step of mechanically pumping each of the compositions from their respective chambers.
- [c73] A method of cleaning a carpet according to claim 67 wherein the fabric/carpet cleaning composition comprises one or more cleaning solvents, a surfactant and, optionally, a fragrance.
- [c74] A method of cleaning a carpet according to claim 73 wherein the fabric/carpet cleaning composition further includes a pH adjusting agent to maintain a pH in the cleaning solution between 7.5 and 12.0 in order to trigger release of oxygen in the oxidizing composition.
- [c75] A method of cleaning a carpet according to claim 74 wherein the pH of oxidizing solution is in the range of about 1.5 to about 8.5.
- [c76] A method of cleaning a carpet according to claim 75 wherein the pH of oxidizing solution is about 6.8.
- [c77] A method of cleaning a carpet according to claim 76 wherein the pH in the cleaning solution is about 9.5.
- [c78] A method of cleaning a carpet according to claim 77

wherein the fabric/carpet cleaning composition further includes at least one of an anti-resoil and anti-stain agent.

[c79] A method of cleaning a carpet according to claim 78 wherein the oxidizing composition includes deionized water, a peroxide compound, a stabilizer and, optionally, anti-soil and/or anti-stain protectants.

[c80] A method of cleaning a carpet according to claim 79 wherein the peroxide compound in the oxidizing composition is hydrogen peroxide.

[c81] A method of cleaning a carpet according to claim 77 wherein the fabric/carpet cleaning composition further includes at least one of an anti-resoil and anti-stain agent.

[c82] A method of cleaning a carpet according to claim 67 wherein the fabric/carpet cleaning composition further includes at least one of an anti-resoil and anti-stain agent.

[c83] A method of cleaning a carpet according to claim 67 wherein the oxidizing composition includes deionized water, a peroxide compound, a stabilizer and, optionally, anti-soil and/or anti-stain protectants.

- [c84] A method of cleaning a carpet according to claim 83 wherein the peroxide compound in the oxidizing composition is hydrogen peroxide.
- [c85] A method of cleaning a carpet according to claim 67 wherein the pH of the cleaning composition is greater than 7 and the pH of the oxidizing composition is below 7, and wherein the pH of the combined cleaning composition and the oxidizing composition is sufficiently greater than 7 to activate the discharge of oxygen from the oxidizing solution for enhanced cleaning of the carpet surface.
- [c86] A method of cleaning a carpet according to claim 85 wherein the pH of the combined cleaning composition and the oxidizing composition is greater than 8.
- [c87] An aerosol package comprising:  
a first container having a first fluid therein under pressure and having a first dispensing outlet controlled by a first valve;  
a second container, in fixed abutting relationship to the first container, having a second fluid, different from the first fluid, therein under pressure and having a second dispensing outlet controlled by a second valve; and  
a dispenser having a dispensing orifice fluidly connected to each of the first and second dispensing outlets and an



actuator connected to each of the first and second valves for simultaneously opening each of the first and second valves to simultaneously dispense fluids from the first and second containers.

- [c88] An aerosol package according to claim 88 wherein the dispensing orifice is positioned at one side of the first container distal from the second container.
- [c89] An aerosol package according to claim 88 wherein the two containers are joined together with an adhesive.
- [c90] An aerosol package according to claim 88 wherein the two containers have a thin film stretched around them.
- [c91] An aerosol package according to claim 91 wherein the film is at least partially transparent.
- [c92] An aerosol package according to claim 88 wherein the dispenser comprises an integrally molded body that includes a handle and the actuator, and the actuator is resiliently cantilevered from a portion of the body.
- [c93] An aerosol package according to claim 92 wherein the molded body further includes an integral channel between the first and second dispensing outlets and the dispensing orifice.